The System Challenge: Mapping the Process Pathway

(Year 6 - Ages 11-12):

Lesson 3 of 9

Lesson Overview

Lesson Title:	The System Challenge: Mapping the Process Pathway
Year Level:	Year 6 (Ages 11-12)
Lesson Duration:	60 minutes
Key Focus Areas:	Systems Thinking, Scientific Literacy, Sequencing, Logistics, and Teamwork.
Curriculum Links:	Australian Curriculum - Health and Physical Education (Foundation)

- AC9TDE6P01: Apply principles of systems thinking to investigate, design, plan and manage projects, including sequencing and documenting steps in a process.
- AC9HP6P09: Investigate different sources and types of health information and how these apply to their own and others' health choices (linked to understanding health systems).
- AC9HS6K07: Explain the key roles and responsibilities of key institutions and processes in Australia's democracy and legal system (linked to understanding complex social systems).

Learning Intentions

- Understand that organ and tissue donation is a highly organized, safe, and collaborative system involving medical and non-medical professionals.
- Investigate and sequence the basic steps of the simplified Organ Transplant Pathway and the Tissue Transplant Pathway.
- Identify the critical difference between the two pathways (i.e., the urgency required for organs versus the storage capability for tissues).
- Recognise the need for precise teamwork and decision-making in a high-stakes, life-saving system.

Success Criteria

- Correctly sequence the simplified steps for both an organ and a tissue transplant using a flowchart.
- Explain the key logistical difference between the two processes (e.g., "Organs need a specific time window; tissues can wait").
- Identify at least two different teams or roles essential to making the process work (e.g., The Coordinator, The Surgeon).
- Use systems language (e.g., sequence, process, logistics, coordination, pathway) when describing the act of donation.

Teaching Sequence

Work through this lesson in the following sequence:

Duration	Part	Focus
10 minutes	Part A: The System Hook	Introduction, Review L1 & L2, and defining the Process Pathway (Systems Thinking Metaphor).
20 minutes	Part B: Pathway A Challenge	Group Activity: Sequencing the Organ Transplant Pathway (The Race Against Time).
20 minutes	Part C: Pathway B Challenge	Group Activity: Sequencing the Tissue Transplant Pathway (The Tissue Bank Magic).
10 minutes	Part D: Process Engineer's Debrief	Comparing Pathways (Urgency vs. Storage), Final Reflection, and Ethical Conclusion.

Part A: The System Hook (10 minutes)

Step 1. Review and Introduction

- Say: "We know altruism has a Domino Effect (L1) and requires Empathy (L2). Today, we ask: How does the kindness get from one person to the next? It requires an incredible system! We are Process Engineers today."

Step 2. The Two Pathways Metaphor

- Remind students: Organs are fragile 'machines'; tissues are storable 'materials'.
- Say: "Because of this scientific difference, the process is split into two special pathways: one that's a race, and one that's a planned mission."

Part B: Pathway A Challenge (20 minutes)

Step 1. Organ Pathway Briefing

- Say: "Pathway A is the Organ Transplant Pathway—the 'Race Against Time.' Organs must be transplanted quickly. You must sequence the steps perfectly to save the life."

Step 2. Group Sequencing Activity

- Distribute the "Organ Pathway Cards" (scrambled) and instruct teams to collaborate on ordering the steps into the Pathway A flowchart on the worksheet. (Steps include: Family Decision > Coordinator Finds Match > Surgeons Retrieve > Transplant Occurs).

Part C: Pathway B Challenge (20 minutes)

Step 1. Tissue Pathway Briefing

- Say: "Pathway B is the Tissue Transplant Pathway—the 'Planned Mission.' Since tissues are strong materials, this pathway is not rushed. The key difference is the Tissue Bank."

Step 2. Group Sequencing Activity

- Distribute the "Tissue Pathway Cards" (scrambled). Teams sequence the steps into the Pathway B flowchart. (Steps include: Family Decision > Tissue Collection > Tissue Bank Storage > Doctor Orders Tissue for Repair).

Part D: Process Engineer's Debrief (10 minutes)

Step 1. Sharing and Comparing

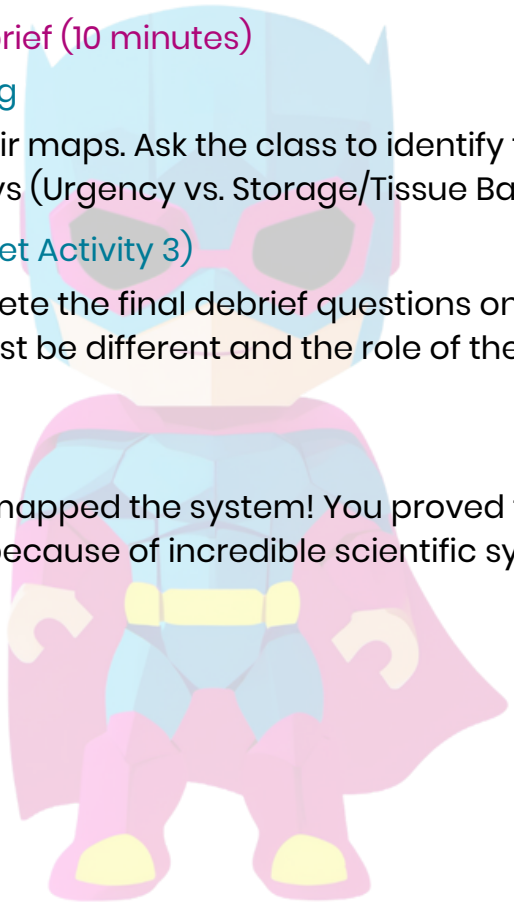
- Have 1-2 groups share their maps. Ask the class to identify the key logistical difference between the two pathways (Urgency vs. Storage/Tissue Bank).

Step 2. Final Debrief (Worksheet Activity 3)

- Instruct students to complete the final debrief questions on the worksheet, explaining why the two pathways must be different and the role of the Coordinator (teamwork/logistics).

Step 3. Ethical Conclusion

- Say: "You've successfully mapped the system! You proved that the Domino Effect of kindness is only possible because of incredible scientific systems and precise human teamwork."



Differentiated Learning

- Extension:
  - Challenge students to create a simple written or drawn "job description" for the Donation Coordinator, focusing on the logistics and communication skills needed to manage this complex system.
- Learning Support:
  - For the sequencing challenge, provide teams with a pre-numbered starter list of the steps to ensure they have the correct components before ordering them.

Teacher Reflection

- Did the Systems Thinking approach work for this Year 6 group? Were students able to use the terms "Pathway," "Sequencing," and "Tissue Bank" correctly?

Assessment

- Worksheet (Flowcharts): Assess the logical and correct sequencing of steps for both pathways.
- Worksheet (Debrief): Assess the explanation of the difference (urgency vs. storage).

Additional Notes:

This lesson is essential for fulfilling the Design and Technologies (Systems Thinking) and HPE curriculum standards by providing the scientific explanation of how donation works. The focus must be maintained on logistics, safety, and coordination; explicitly avoid any graphic or complex medical details. The Tissue Bank concept is the core scientific differentiator and should be taught with a sense of wonder and awe at the storage capabilities of modern science.